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REMARKS

Claims 1-20 plus new claims 21-22 are now pending in this application. The additional fee required for the newly added claims is submitted herewith.

Explanation of Amendments

As can be seen from above, two new claims have been added to further distinguish the invention from the art cited in the Office Action. Claim 21 further distinguishes fixed array printing from a scanning printhead. Claim 22 covers printing at certain fast print speeds which cannot be reached with a scanning printhead. Basis for both of these claims is found in the specification on page 14, last paragraph. Applicants respectfully request that such claims be entered into the record for further examination of this application.

Claim Rejections

In the Office Action, the original claims 1-20 were rejected on a variety of grounds that are individually discussed below. The Applicants submit that, taking into consideration the claimed subject matter as a whole, none of the cited art singly or in combination discloses or suggests the present invention.

(1) §102 Rejection based on Yoshihira et al:

Claims 1-3, 5-8, 16, 17, 19 and 20 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by the disclosure of Yoshihira et al. (US20020033862)

Claim 1 of the instant application recites:

A method of inkjet printing a substrate, comprising the steps of:

- (a) providing an ink jet printer that is responsive to digital data signals, said printer being equipped with a printhead array which is fixed in position ("fixed array") and which ejects ink droplets of about 1-2 pL;
- (b) loading the printer with the substrate to be printed;
- (c) loading the printer with a color ink jet ink set comprising:

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- (i) a cyan ink having a vehicle and at least about 2.5 percent by weight of soluble cyan dye,
- (ii) a magenta ink having a vehicle and at least about 3.6 percent by weight of soluble magenta dye and
- (iii) a yellow ink having a vehicle and at least about 3.0 percent by weight of soluble yellow dye; and
- (d) moving the substrate past the printhead array and printing on the substrate using the inkjet ink set in response to the digital data signals.

In contrast, Yoshihira et al. fail to teach a method of inkjet printing using a printer equipped with a printhead array which is "fixed" in position and ejects droplets of about 1-2 pL, as required in step "a" of Applicants' invention.

The Examiner refers Figure 2 of Yoshihira et al. and to paragraph [0038] wherein it is stated that each of the CMYK heads in Figure 2 has 256 nozzles which eject droplets of about 2 pL. In contrast to Examiner's assertion, the printheads in Figure 2 are slidably mounted on a carriage (see paragraph [0031]) (not fixed, as represented by Examiner) and as stated in paragraph [0034] "recording is possible by discharging ink from the heads with the traveling of the carriage both in the X and Y direction" (where the X-Y direction is noted in Figure 2). Clearly, the printheads move (scan) in order to accomplish printing and are not fixed in position according to the present invention. A fixed array printhead is separate and distinct from a traveling (or scanning) printhead. The difference between the two types of printheads is well understood in the art and clear from the plain meaning of the words used to described them.

At paragraph [0038] there is also reference to 2 pL drops but this is in connection to the printer of Figure 1 which, as just noted, is a scanning head and not a fixed array. In fact, there is no reference whatsoever to any particular drop size associated with a fixed array printhead.

As discussed in the present specification, the use of page-wide fixed array printheads offer a number of advantages over scanning printheads, such as the

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potential for faster print speeds. Speed is achieved by applying ink from a large number of nozzles in one pass of the substrate. However, applying the full ink load in one pass creates problems of bleed control and ink dry-time. Problems of bleed and dry-time can be minimized or eliminated by jetting small (1-2 pL) drops. However, it was discovered (and demonstrated in the specification) that use of current commercial dye based inks will not be suitable for 1-2 pL drops from an array because the optical density and chroma will be poor relative to current printers. A need therefore, existed for inkjet ink formulations that provide good image quality and good jetting performance in fixed array printheads firing small drops. The present invention satisfies that need.

Turning back to the §102 rejection, Yoshihira et al clearly fail to teach, among other things, use of a fixed array printhead (Applicant's step "a"). "A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. Therefore, the Applicants submit that the disclosure of Yoshihira et al does not meet the standard for anticipating claim 1, along with claims 2-3, 5-8, 16, 17, 19 and 20 dependent thereon, and this rejection should be reconsidered and withdrawn.

Furthermore, the examiner has taken the position that Yoshihira et al also disclose the correct proportion of dyes as claimed in Applicants' inkset. This assertion, however, is incorrect. With regard to the requirement of Applicants' step (c), a cyan, magenta and yellow ink set having certain dye content, the Examiner refers to paragraph [0053] wherein there is reference to colorant content in the range of 1-10% and preferably in the range of 2-8%. However, the range is general to "colorant" which includes pigment and dyestuff and is not specific to soluble dyes or to any particular color of dye. At paragraph [0085] there is disclosed a magenta ink with 3.0% dye and a yellow ink with 3.0% dye but these values do not disclose the claimed magenta range and do not include a cyan value. There is no cyan, magenta and yellow dye ink set described which meets all of Applicants' claim limitations in step (c). Moreover, Yoshihira et al. are concerned with printers having scanning printheads and disclose no

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ink set of any sort for use specifically with a fixed array printhead such as that prescribed in Applicants' step (a).

Thus, for any of these reasons, it is clear that Yoshihira et al cannot be used as an anticipating reference and the rejection should clearly be reconsidered and withdrawn.

(2) §103 Rejections:

Four obviousness rejections are set forth, all of which are based on Yoshihira et al. as the primary reference and therefore this reference will be discussed first, separately. The basic deficiencies of Yoshihira et al. are detailed above under novelty and incorporated here by reference. These deficiencies include lack of disclosure of a fixed array printhead, lack of disclosure of 1-2 pL drops (or any size drops) for a fixed array printhead, and lack of disclosure of a cyan, magenta and yellow dye ink set of any sort and in particular a dye ink set with Applicants' specified dye concentration limits. There is nothing in any of the secondary references discussed below to make up for the deficiencies in the primary reference, to arrive at the invention as presently claimed. The Applicants therefore submit that, taking into consideration the claimed subject matter as a whole, none of the cited art singly or in combination discloses or suggests the present invention.

(i) §103 Rejection based on Yoshihira et al and Shimomura

Claims 4 and 18 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over the disclosure of Yoshihira et al. (US20020033862) as applied above in view of Shimomura (US 586638).

Without going to the basis of the rejection, for at least the reasons given above, claim 1 is patentable over Yoshihira et al. Since claims 4 and 18 depend from claim 1, directly or indirectly, for at least this reason, these claims are patentable over Yoshihira et al, when taken alone. Furthermore, there is nothing in Shimomura to make up for the deficiencies in the primary reference to arrive at the invention as presently claimed.

The examiner, however, has alleged that Yoshihira disclose the ink set of claim 1; but fails to teach the specific cyan, yellow and magenta dyes. The examiner relies on

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Shimomura to show the use of these specific dyes in inkjet ink formulations. Although Shimomura et al. name some specific dyes, the basic deficiencies of Yoshihira et al. set forth above relative to claim 1 are still not overcome. Furthermore Shimomura pertains to ejecting droplets of ink from traditional scanning printheads (Figure 4) which must move across the substrate in order to print (col. 20, lines 5-47) and makes no mention of fixed array printheads. Consequently, the combined prior art wholly fails to teach or fairly suggest the invention as presently claimed.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)" M.P.E.P. § 2143.03. Accord M.P.E.P. § 706.02(j). Therefore, the rejection of claims 4 and 18 based on Yoshihira et al and Shimomura should be reconsidered and withdrawn.

(ii) §103 Rejection based on Yoshihira et al and Arita et al.

Claims 9, 11, 12, 14, and 15 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over the disclosure of Yoshihira et al. (US20020033862) as applied above in view of Arita et al. (US20030107632).

Without going to the basis of the rejection, for at least the reasons given above, claim 1 is patentable over Yoshihira et al. Since claims 9, 11, 12, 14 and 15 all depend, directly or indirectly from claim 1, for at least this reason, these claims are patentable over Yoshihira et al, alone. Furthermore, there is nothing in Arita et al. to make up for the deficiencies in the primary reference to arrive at the invention as presently claimed.

The Arita et al. reference is asserted because it allegedly discloses certain of Applicants' ink sets having dye concentrations in the same proportions. Contrary to examiner's assertion, Arita et al. disclose no dye inks or dye inks sets. The colorants of Arita et al. are insoluble, dispersed particles, not soluble dye as required by Applicants' invention. All colorants mentioned in Arita et al. are pigment [0062-0069] which are insoluble and require treatment to be dispersible [0070]. In all cyan, magenta and yellow colorant examples [0139-149] the pigments are surface treated to form dispersible pigments. Furthermore, Arita et al. pertains to 5-43 pL droplets jetted from

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traditional scanning printheads (Figures 1-4) and makes no mention of fixed array printheads. The examiner acknowledges that Yoshihira et al. lacks the description of Applicants' prescribed ink sets and clearly Arita et al. do not fill that gap.

As such, this obviousness rejection of claims 9, 11, 12, 14 and 15 should similarly, be reconsidered and withdrawn, since the prima facie case for obviousness has not been established.

(iii) §103 Rejection based on Yoshihira et al and Shingai et al.

Claims 10 stands rejected under 35 U.S.C. § 103(a) as allegedly being obvious over the disclosure of Yoshihira et al. (US20020033862) as applied above in view of Shingai et al. (US6350019).

Without going to the basis of the rejection, claim 1 is patentable over Yoshihira et al. Since claim 10 depends indirectly from claim 1, for at least this reason, this claim is patentable over Yoshihira et al, alone. Furthermore, there is nothing in Shingai et al. to make up for the deficiencies in the primary reference to arrive at the invention as presently claimed.

The examiner has applied Shingai et al. since they disclose 1.5 pL droplets. However, Shingai et al. pertain to scanning printheads (Col. 1, lines 26-28) which must move across the substrate in order to print. As discussed previously, scanning printheads are separate and distinct from fixed array printheads prescribed by the present invention. Shingai et al. make no disclosure of fixed array printheads or droplets volumes ejected therefrom. Furthermore, Shingai et al. make no disclosure of any ink set for any kind of printer. The combination of Shingai et al. with Yoshihira et al. still does not overcome the basic deficiencies of Yoshihira et al. alone. The combination still does not disclose a fixed array printhead ejecting 1.5 pL droplets of specified cyan, magenta and yellow dye ink. As Applicants' invention as a whole is neither disclosed nor fairly suggested, reconsideration and withdrawal of this rejection are also requested.

(iv) §103 Rejection based on Yoshihira et al and Leopold et al.:

Claims 13 stands rejected under 35 U.S.C. § 103(a) as allegedly being obvious over the disclosure of Yoshihira et al. (US20020033862) as applied above in view of

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Leopold et al. (US6433555).

Without going to the basis of the rejection, for at least the reasons given above, claim 1 is patentable over Yoshihira et al. Since claim 13 depends indirectly from claim 1, for at least this reason, this claim is patentable over Yoshihira et al, alone. Furthermore, there is nothing in the Leopold et al. to make up for the deficiencies in the primary reference to arrive at the invention as presently claimed.

The examiner has applied Leopold et al. because it discloses 1.0 pL droplets. First of all, the Leopold reference is obviously an error. It is assumed the Examiner meant to cite Silverbrook et al. (US6443555), not Leopold et al., and the following arguments are based accordingly.

Silverbrook et al. disclose a fixed array printhead ejecting 1.0 pL droplets but make no disclosure of an ink set other than a general reference to "CMYK inks" (col 6, lines 14 and 38). The combination Yoshihira et al. with Silverbrook et al. still does not disclose Applicant's specified cyan, magenta and yellow dye ink set. As applicants invention as a whole is not disclosed or fairly suggested, reconsideration and withdrawal of this rejection are respectfully requested.

Conclusion

As has been noted in the preceding remarks, an inkjet printer with fixed array printhead, as prescribed by the present invention, is separate and distinct from an inkjet printer with a traditional scanning printhead. Printers with fixed array printhead have unique requirements which the present invention sets out to address and which have not heretofore been addressed in the art.


As none of the art of record, alone or in any combination, teaches or fairly suggests Applicants' invention as a whole, the Applicants submit that the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of this application in light of these remarks is courteously solicited.

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If the Examiner has any comments or suggestions which could place this application in even better form for allowance, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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